PATENT SPECIFICATION

295,819

Application Date: July 26, 1927. No. 19,851 / 27.

Complete Accepted: Aug. 23, 1928.

COMPLETE SPECIFICATION.

Improvements in or relating to Apparatus for the Determination of the Cuts of Roof Jack-rafters and the like.

I, FRITZ KRESS, German citizen, of Lustnau, near Tübingen, Wurtemberg, Germany, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to an improved bevel and square of the kind comprising a graduated base member, a graduated hypotenuse member and a graduated upright member displaceable along the base member, the hypotenuse member being pivotally interconnected to the base member and movable over a protractor plate. In such an arrangement it has been proposed to provide the base member with an arm for attachment of the appliance to a supporting staff. The present invention is more particularly for use for the determination of the perpendicular, basal, bevelling and connecting cuts of rafters and jack rafters for hip and intersecting roofs.

The aforesaid cuts for rafters and jack-rafters or hip and intersecting roofs have generally been heretofore determined by a carpenter by means of the vertical projection of the roof, arris, valley and other inclination profiles drawn to a natural scale on a marking floor or by drawing on a marking board to a reduced scale, thus necessitating a considerable waste of time and also inexactitude in the result. According to the cuts so determined templets are made out of boards, of which for a single roof truss 10 to 20 templets are often necessary, apart from the fact that for each roof truss new templets must be made owing to difference in their angle of inclination.

The present invention has for its object to provide an improved bevel and square by means of which the different cuts can be made directly on the ends of the rafters or beams themselves and the roof profile need no longer be projected and drawn out to natural scale on a flooring thus essentially saving time and material. Besides the size of the angle for the cut can be determined so that the cut section of the rafter or beam end can be effected by the usual circular saws and like special machines which was hitherto impossible.

A further improvement according to the present invention consists in that a bevel and square is provided by which the lengths of the rafters, wale-pieces, braces and like structural timbers lying between the roof-rafters and jack-rafters can be mechanically determined.

According to the present invention a bevel and square of the kind referred to is provided with a graduated member slidably mounted on the upright graduated slidable member the said slidably mounted graduated member being displaceable in opposite directions on the upright graduated slidable member. The upright graduated member is provided with a slider which is adapted to act as a stop for either slope rail or for both slope rails. The slider is also formed as a vernier. The right hand end of the base member may be provided with a quadrantal member having two angular scales.

In order that the invention may be clearly understood and readily carried into effect, reference is made to the accompanying drawings which show diagrammatically and by way of example apparatus in accordance with the present invention.

Figures 1 and 2 are respectively a plan and a cross section of a roof truss for a hip roof.

Figure 3 is a plan of the apparatus.

Figures 4 and 5 drawn to an enlarged scale are respectively a plan and a side view of the sloping or inclined rail arrangement of a constructional form.

Figures 6 and 7 are similar views of the mid-rail arrangement.

Figure 8 is a perspective view of the mid-rail slider with stop.

Figure 9 is a plan of a constructional form of apparatus.

Figure 10 drawn to an enlarged scale is a plan showing the means for guiding the additional rail or rails.

Figure 11 is a sectional side view of Figure 10.

The apparatus according to the present invention uses a base member *a* on which is mounted an upright member *b* which is displaceable in accordance with the

graduations of the scale c and a vernier d on the upper edge of the base member, and capable of being adjustably secured in position by means of a clamping screw e.

On one end of the base member a having the pivot f at the beginning of the scale c and on the upper edge of the said rail a is pivotally mounted a slope rail g. This is adjustable to any suitable angle or slope over a double and oppositely arranged angular scale h the angle or slope being readable from the said angular scale. The slope rail g is likewise provided on the inner edge with a scale the origin of which is in centre of the pivotal point f.

The slope rail g may be maintained in any adjusted position by the clamping screw i.

On the middle member b or rail is a vernier l constructed as a slider k, which can be adjusted along a scale m and further a stop n is provided on the slider k on which the slope rail g is applied, as shown in Figure 3, when the slider k is adjusted on the middle member b or rail. The troublesome and inexact adjustment of the slope rail g over the dividing part of the graduated scale m on the middle rail g is thus avoided.

For certain classes of work a second slope rail g^1 may be required. This is as shown in Figure 3, mounted on the other end of the base member a or rail the pivotal point f^1 thereof being on the lower edge of the said base member a or rail. On this as on the other edge of the rail b is a second graduated scale c^1 and a further graduated scale m^1 on the middle member b and the slider k is provided with a second stop n^1 for the slope rail g^1. The latter is adjustable over an angular scale h^1 having the angles reversely indicated thereon or in opposite directions, the said slope rail g^1 being retained in the adjusted position by a clamping screw i^1. This is conveniently positioned on a laterally extending arm o in order to carry the rail position to the smallest angle. In order to adjust the slope rail g^1 to the maximum angle the graduated member a is provided with scale plate p having a corresponding projection q.

According to the present invention a further rail r is provided which is so formed firstly that it can be displaced on each of three rails a, b, g and so that it can stand at right angles to these rails. For this purpose either of the guides or both guides s and t with which it is displaceably guided on the rails is or are disposed against the action of a spring u that is to say it is drawn by this spring u constantly against the respective rail. In order to remove the rail r and to place it on one or other of the rails a b or g the movable guide t is provided with an operating knob v which is engaged with the said rail from the exterior through a longitudinal slot in the rail r which allows of the movement of the head that is the displacement of the guide t. The parallel displacement of the guide t is ensured by a second screw w which is screwed into a projection x on the movable guide and passes through a slot in the rail r.

The rail r is provided with a graduated scale y which as shown in Figure 9 begins on the measuring edge of the rails a, b.

If the rail r is applied on the perpendicular or on the hypotenuse of the triangle corresponding to the collar beam to be calculated the scale number at the point of intersection of the rail r and for example g gives the length and the half length of the relevant collar beam z.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A bevel and square of the kind referred to wherein a graduated slidable member is provided on the upright graduated slidable member and displaceable in opposite directions thereon.

2. A bevel and square according to Claim 1, wherein the graduated slidable member on the upright graduated slidable member is retained thereon by frictional means adapted to engage the opposite edges of the said upright graduated member.

3. A bevel and square according to Claim 1, wherein the base member is provided at the right hand end with a slope member pivotally connected thereto and with a protractor device.

4. A bevel and square according to Claim 1, wherein the graduated slope member at the right hand end of the base member has the origin of its scale in the pivotal point of the said slope member with the said base member.

5. A bevel and square according to Claim 3, wherein the upright graduated slidable member is provided with a slider which is adapted to act as a stop for the slope rail or for both slope rails.

6. A bevel and square according to Claim 5, wherein the slider is also formed as a vernier.

7. A bevel and square according to Claim 3, wherein one slope member has its pivotal point on the upper edge of the base member the other slope member having its pivotal point on the lower edge of the base member.

8. A bevel and square according to Claims 1 and 3, wherein the upright

graduated slidable member, the second graduated slidable member and the slope members are all of equal width the second graduated slidable member being provided with a fixed guide as well as a guide rearwardly displaceable under the action of a spring.

9. A bevel and square according to Claim 1, wherein all the slidable members are adapted to be retained in position on their guiding members by frictional contact of suitable means adapted to engage the edges of the respective members on which the displaceable members are mounted.

10. A bevel and square for the mechanical determination of the cuts in roof beams, rafters and like spars, having its parts constructed, arranged and combined substantially as hereinbefore described in connection with the several figures of the accompanying drawings.

Dated this 26th day of July, 1927.

J. S. WITHERS & SPOONER,
Chartered Patent Agents,
Staple House, 51 and 52, Chancery Lane,
London,
Agents for the Applicant.

[This Drawing is a full-size reproduction of the Original]

Fig. 1.

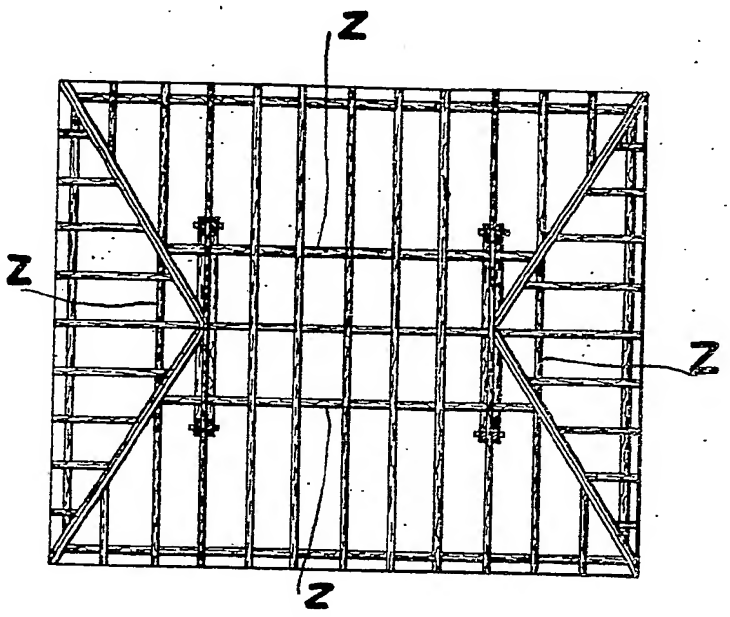

Fig. 2.

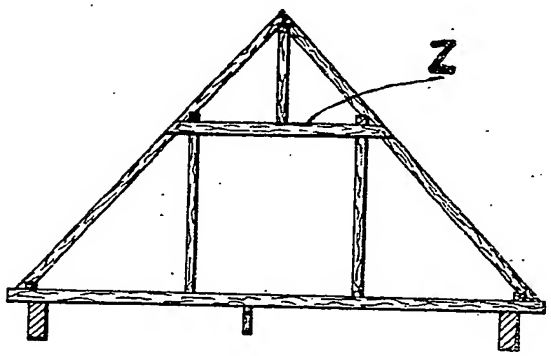

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Fig. 3.

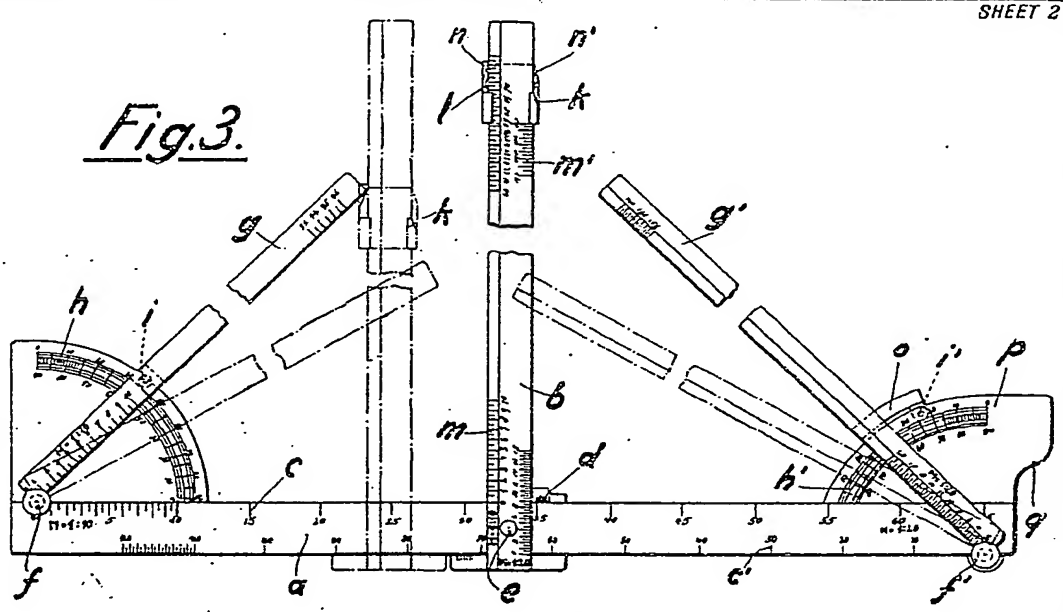
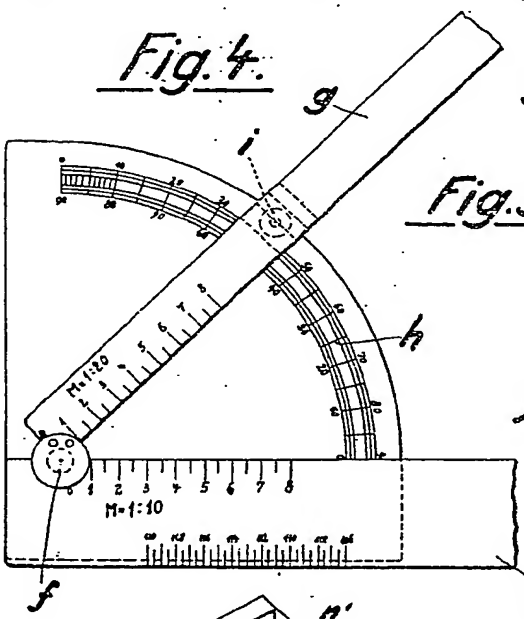


Fig. 4.



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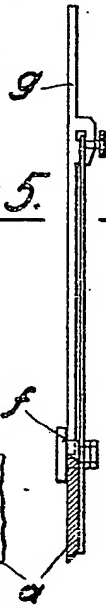
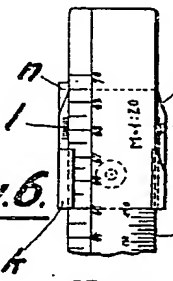


Fig. 6.



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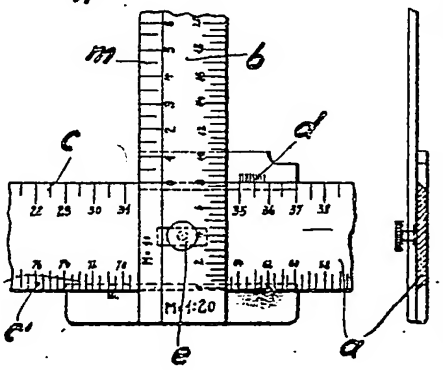


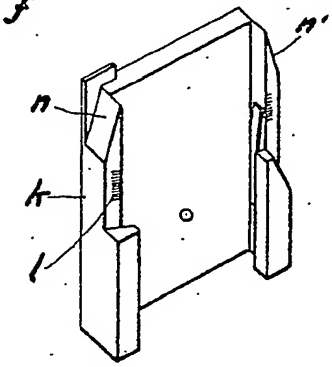
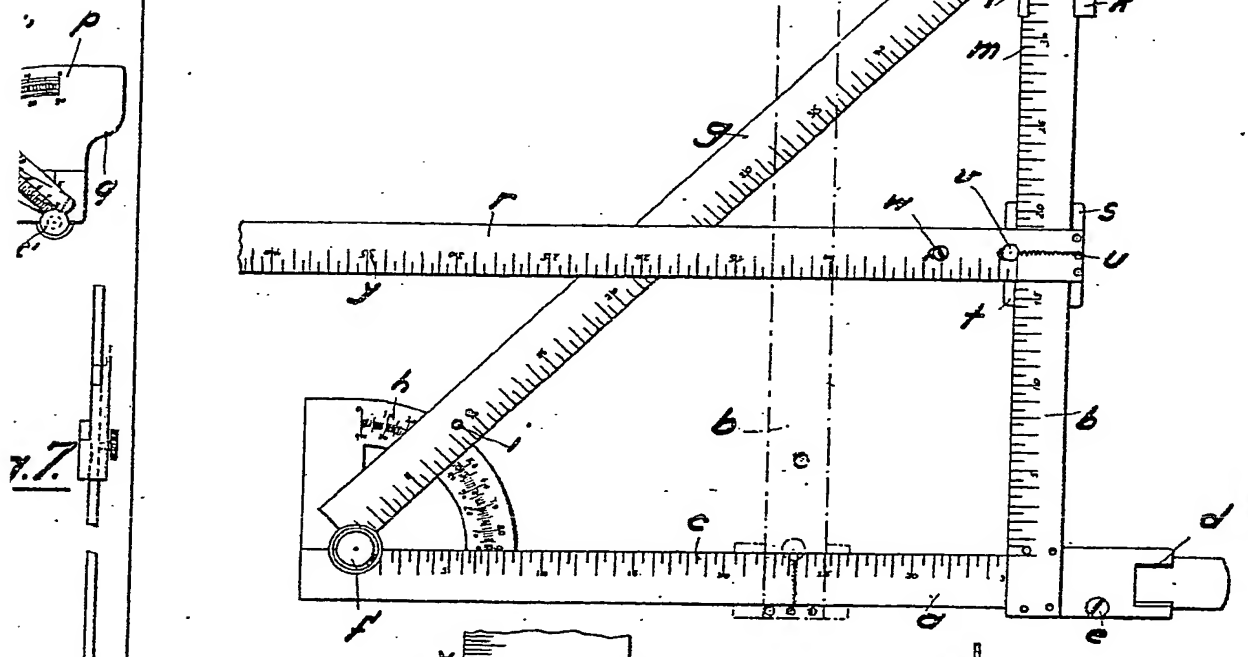


Fig. 8.

Fig. 9.



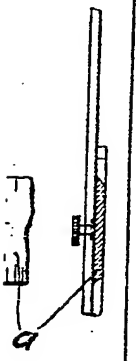


Fig. 10.

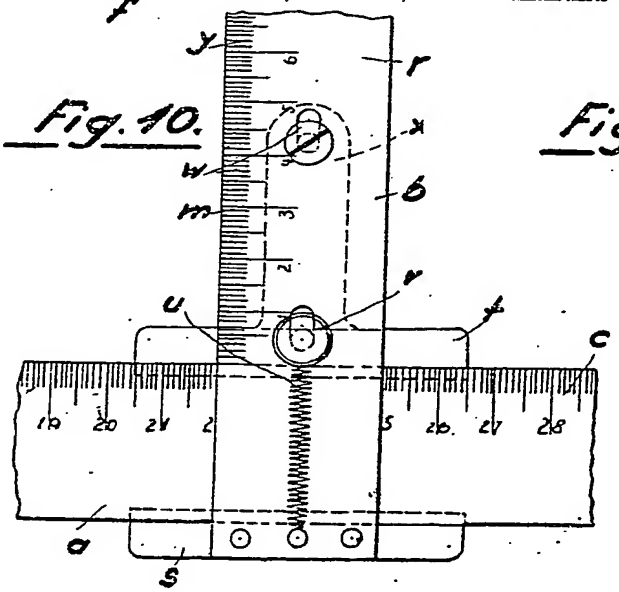
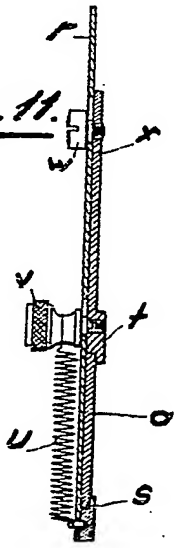


Fig. 11.



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3 SHEETS
SHEET 3

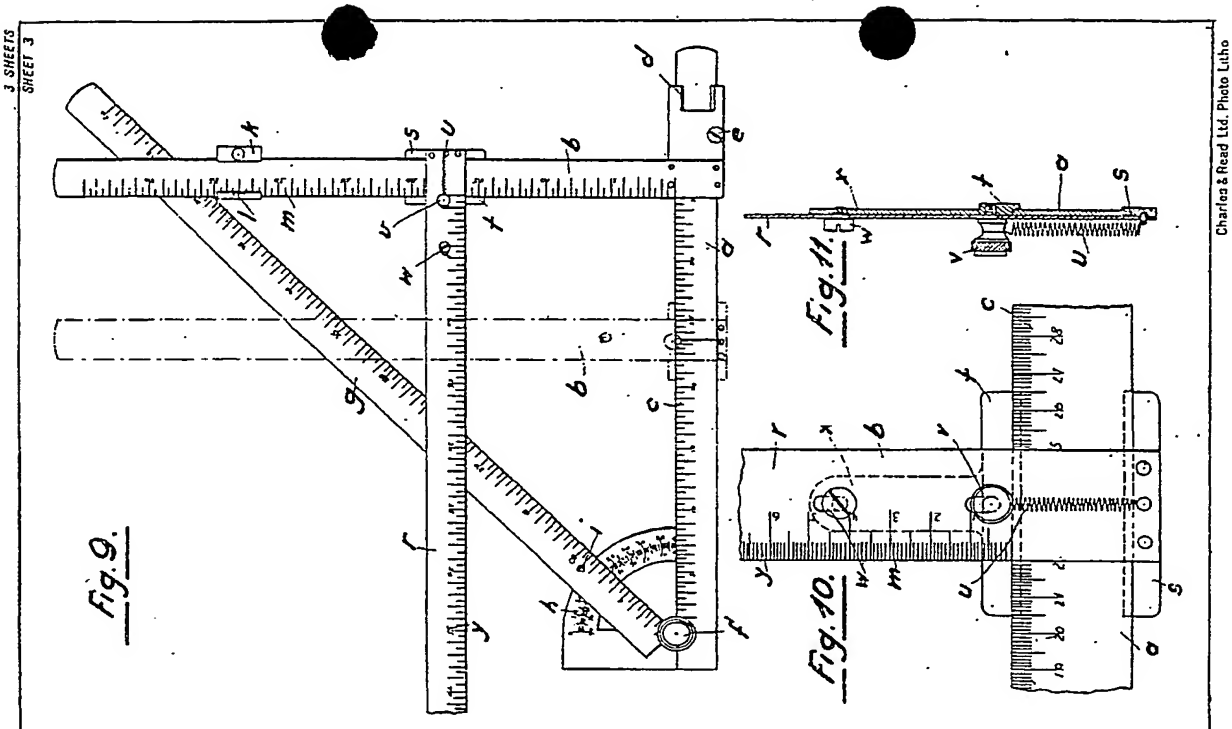

Fig. 9.

Fig. 11.

Fig. 10.

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SHEET 2

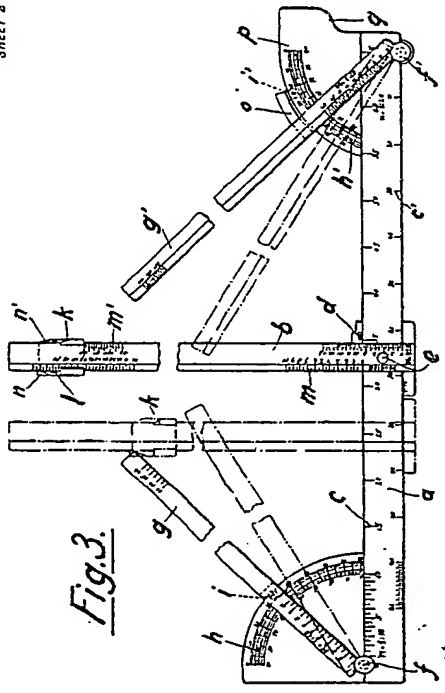

Fig. 3.

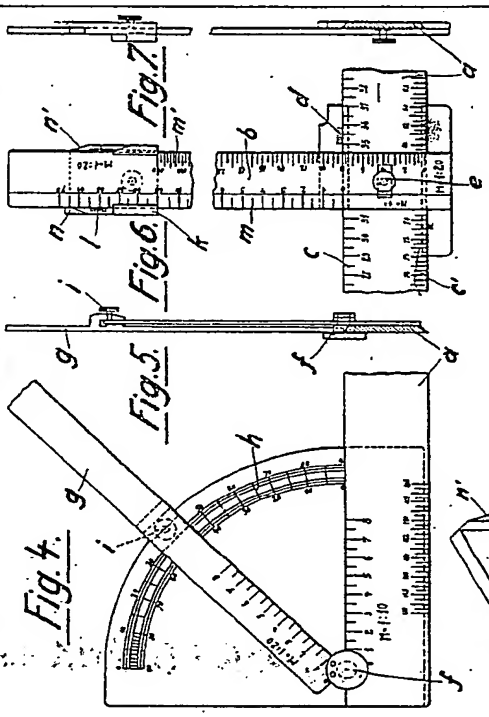

Fig. 4.

Fig. 5.

Fig. 6.

Fig. 7.

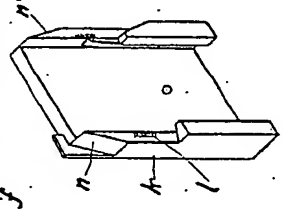

Fig. 8.

295,819 COMPLETE SPECIFICATION

[This Drawing is a reproduction of the Original on a reduced scale]